



# INSTALLATION, OPERATION & MAINTENANCE

## ROOF AND WALL MOUNTED PROFILE FANS

### DIRECT DRIVE

### MODELS VULK & VELK

FORM 1511

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#### **INTRODUCTION**

This manual is to be used as an aid in the proper installation, operation, and maintenance of the above Carnes fans. This information is to be used as a general guide. Due to the variety and complexity of many installations it is the responsibility of the purchaser to assure that qualified personnel handle these procedures.

#### **RECEIVING, HANDLING, & STORAGE**

1. Handle the fan with care. Avoid severe jarring or dropping of the unit.
2. Inspect the unit for damage upon delivery. If the unit has been damaged in transit it is the responsibility of the recipient to file all freight claims.
3. Provide adequate, protected storage prior to installation.

#### **MECHANICAL INSTALLATION CAUTIONS**

1. Do not operate this fan in an environment where combustible or flammable materials, gasses, or fumes are present unless it has been specifically designed and manufactured for use in that environment.
2. Turn the wheel by hand to check clearances. If necessary, adjust the wheel by moving the motor to center the wheel over the inlet venturi and if necessary, raise or lower the wheel on the motor shaft.
3. Ensure that all fasteners and setscrews are tight.

#### **ELECTRICAL INSTALLATION CAUTIONS**

1. Be sure the supply voltage matches the motor nameplate voltage. On multiple voltage motors, check the motor wiring to ensure that the motor has been wired for the correct voltage.
2. All fans must be grounded.
3. Keep all wiring clear of rotating components and moving parts such as gravity or motorized dampers.
4. Make sure power is locked **OFF** at the service entrance prior to wiring or otherwise approaching the fan.
5. A qualified electrician must do all electrical work in accordance with local and/or the National Electrical Code (NEC).

#### **INSTALLATION OF ROOF TOP FANS**

1. This fan is designed for exhaust applications only. Refer to the catalog V-104 for particular application details.
2. Any optional dampers should be mounted to allow free and unobstructed operation.
3. This fan requires a minimum of four (4) mounting fasteners, of the appropriate size and type in order to be securely fastened to the roof curb. Be sure to use an approved sealant or gasket between the fan and curb to prevent leaking and possible vibration.

#### **INSTALLATION OF WALL MOUNTED FANS (VULK Only):**

##### **WALL OPENING PREPARATION**

1. The wall opening must be sized according to the dimensions given in the Specification Sheet 11050 or on page 4 of the Installation Instructions.
2. A mounting frame is supplied and must be attached to the wall on the side that the unit will be on.
3. Fasten the frame to the wall using a minimum size of 5/16" dia. thru-bolts, lag-bolts, expansion-bolts or other appropriate heavy duty hardware for the type of wall construction at hand.
4. Push the supplied metal clips over the frame and line each of them up with one of the 4 unit mounting holes. Flat side out.

##### **WALL OPENING PREPARATION**

1. Identify the Motor Compartment Vent Tube It is a short tube extending out of the motor compartment and passing through the outer air shroud.
2. If a Damper is also being installed with this unit check its mounting position and wiring requirements (if motorized).
3. Apply a quality sealant around the frame in order to prevent water and air leaks between the wall and frame or frame and unit.
4. Lift the unit into position on the wall with the Motor Compartment Vent Tube opening downward. This prevents water from running into the motor compartment.

5. Be sure the unit is in the final position and drive the four self-tapping screws through the pre-punched holes in the Wall Mounting Cap and into the clips installed on the frame.
6. Route the motor supply power wires through the conduit opening next to the unit's air intake.
7. If a wall grille is installed on the inside wall, the wall must be at least 6" thick.

**MECHANICAL AND ELECTRICAL START-UP CAUTIONS:**

1. Be sure the fans inlet, outlet, and the ductwork are open and free of loose objects.
2. Be sure all personnel are clear of fan rotating parts prior to start-up.

**START-UP**

1. Operate the fan under power briefly in order to check for proper rotation. Incorrect fan rotation will cause the motor to over heat.
2. Check the operation of any dampers. Be sure they open and close fully.

**MAINTENANCE CAUTIONS:**

Before performing any maintenance on the fan, be sure the power is locked **OFF** at the service entrance.

All motors supplied with Carnes fans carry a one-year warranty from the date of shipment. For repairs within the warranty period, the motor must be taken to the manufacturer's authorized service dealer. Contact your Carnes Representative for additional warranty details.

**MAINTENANCE**

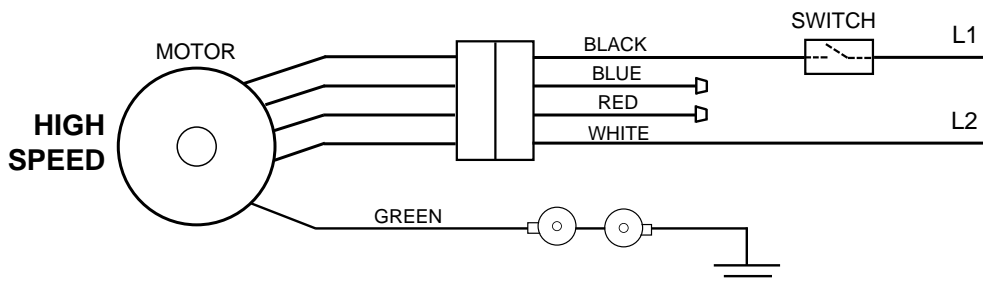
Fans should be carefully checked at least once a year. For critical or rugged applications, a routine check should be done every 2 or 3 months.

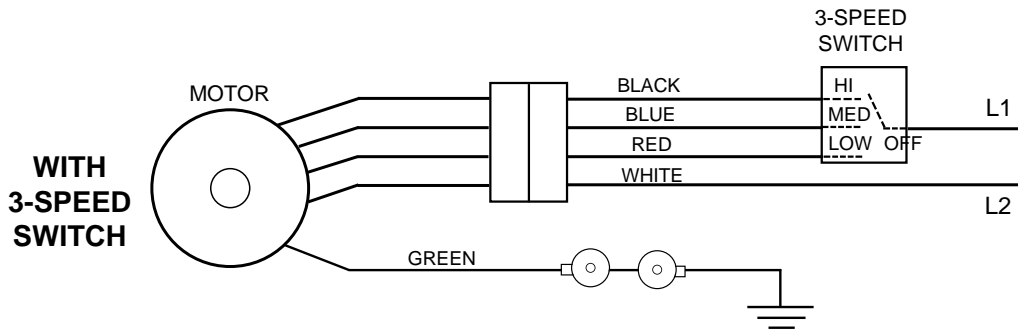
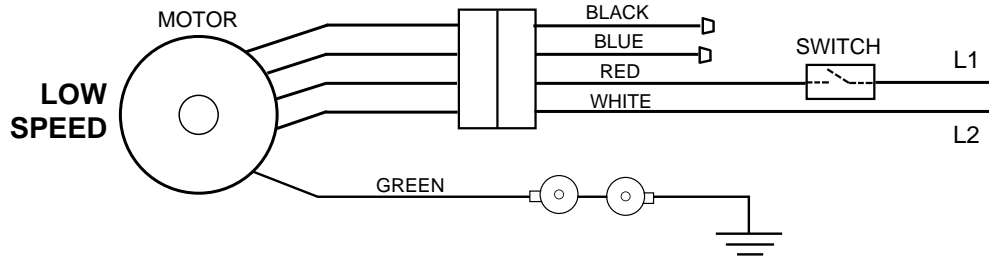
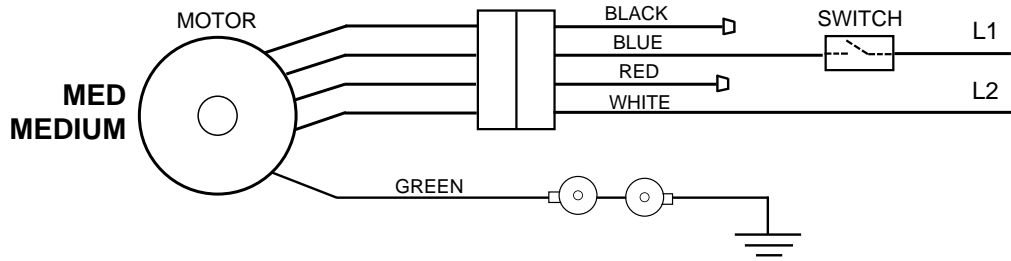
1. A periodic check should consist of spinning the motor shaft with the power locked OFF to be sure the motor turns freely, and the motor bearing run smoothly.
2. Check the wheel to motor shaft setscrew to ensure proper tightness.
3. Access to the motor compartment is obtained by removing the motor cover, which is held in place by (4) machine screws.

**THREE SPEED MOTOR DESCRIPTION**

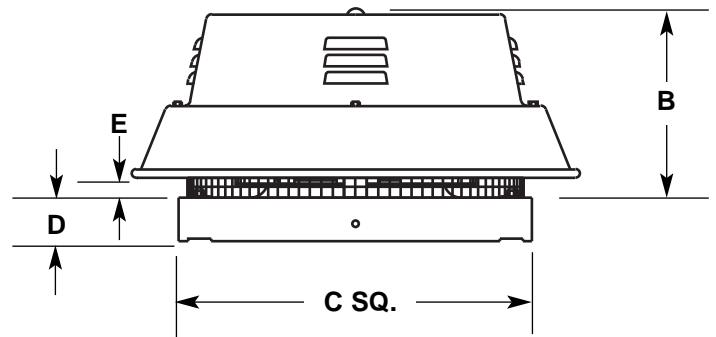
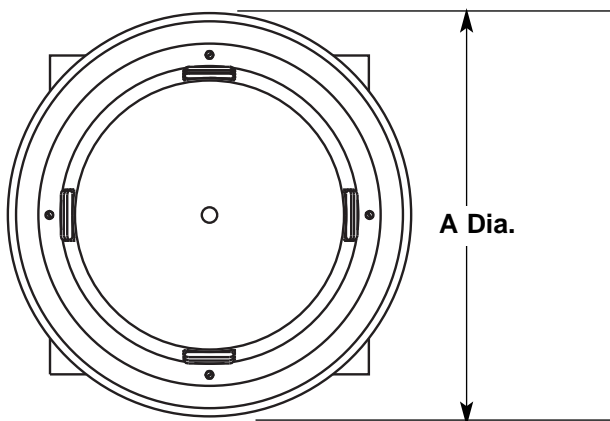
Carnes models VELK and VULK are equipped with three-speed ODP motors as standard. These motors each feature three very distinct speeds and horsepower's, as shown in the performance charts on pages 3 and 5 of this catalog. These motors can be wired direct or dedicated to a particular speed, for example, the motor can be "hard" wired to high speed and the fan will always run on the high speed. These motors can also be wire to a three-speed switch, allowing someone to "change" the speed via a switch between high-medium-low.

**TYPICAL WIRING DIAGRAMS — (ALL MOTORS)**





### DIMENSIONS - VELK

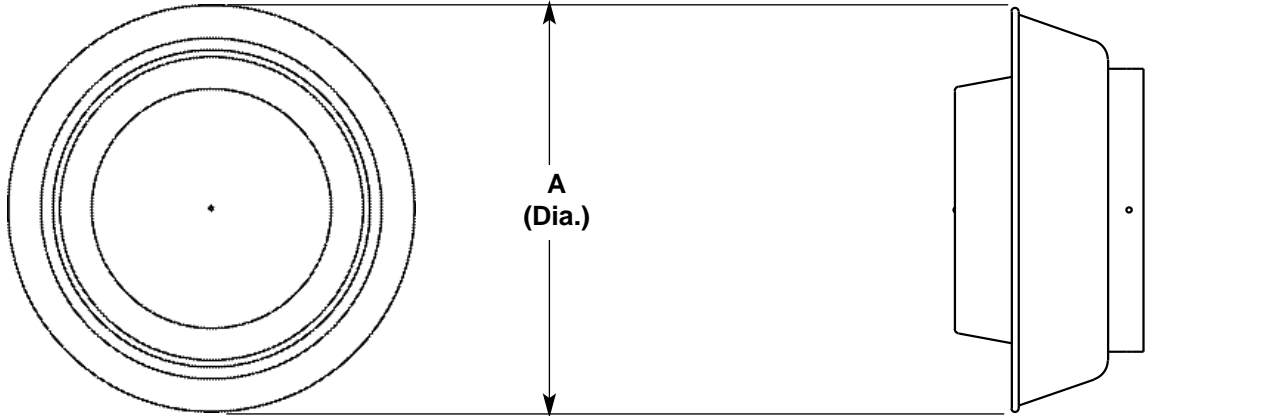


Standard Material Thickness (Inches)					
Unit Size	Housing (Alum.)	Curb Cap (Alum.)	Std. Wheel Blades (Alum.)	Fan Plate (Alum.)	Support Brackets (Alum.)
06	.050	.050	Alum.	.080	.125

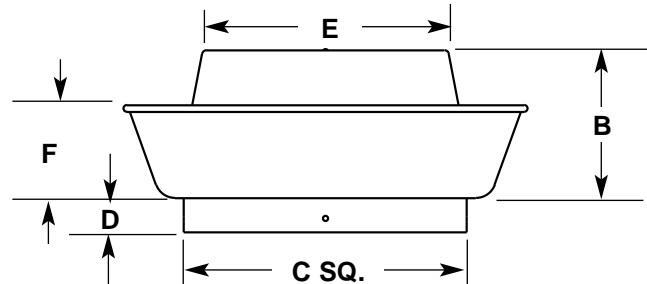
[Dimensional Data Continued on Page 4]

Standard Dimensions (Inches)									
Unit Size	Unit Diameter A	Unit Length B	Inside Curb Cap C	E	Curb Cap Width D	Curb O. D. SQ.	Damper Size SQ.	Roof Opening	Max. Uni Weight W/Motor
06	19-1/2	8	15-1/2	3/4	1-7/8	14	10	11	16

### DIMENSIONAL DATA - MODEL VULK



Standard Material Thickness (Inches)					
Unit Size	Housing (Alum.)	Curb Cap (Alum.)	Std. Wheel Blades Alum.	Fan Plate (Alum.)	Support Brackets (Alum.)
06	.050	.050	Alum.	.080	.125



Standard Dimensions (Inches)										
Unit Size	Unit Diameter A	Unit Length B	Inside Curb Cap C	Motor Cover E	Curb Cap Width D	Curb O. D. SQ.	Damper Size SQ.	Roof/Wall Opening	Max. Uni Weight W/Motor	Shroud Height F
06	22-1/4	8	15-1/2	13-1/2	1-7/8	14	10	11	16	5

### TYPICAL INSTALLATION DETAILS

#### VELK Low Profile Downblast Power Roof Ventilators and Model VULK Low Profile Upblast

Figure 1

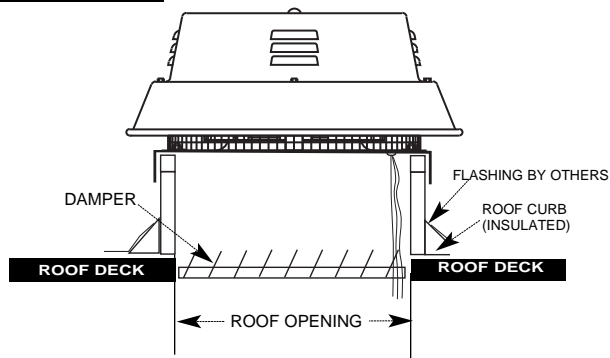
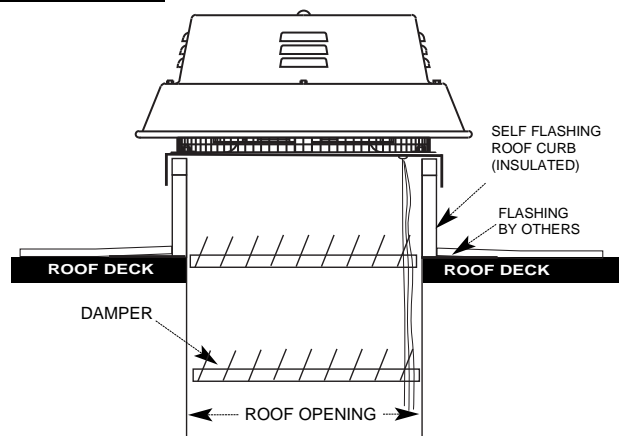
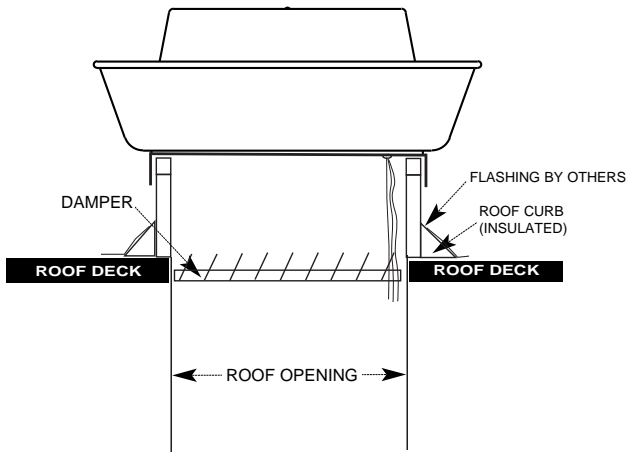


Figure 2



**Figure 3**



**Figure 4**

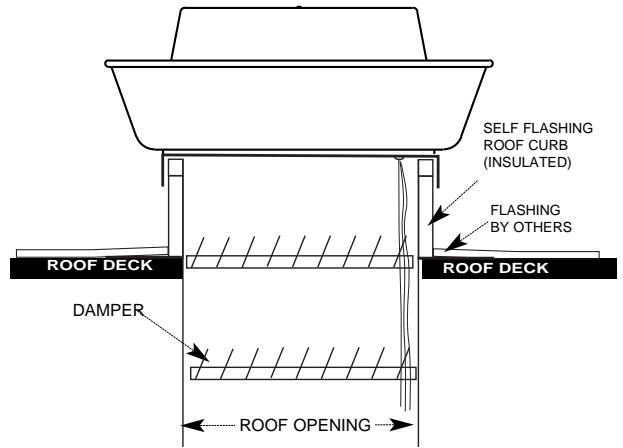
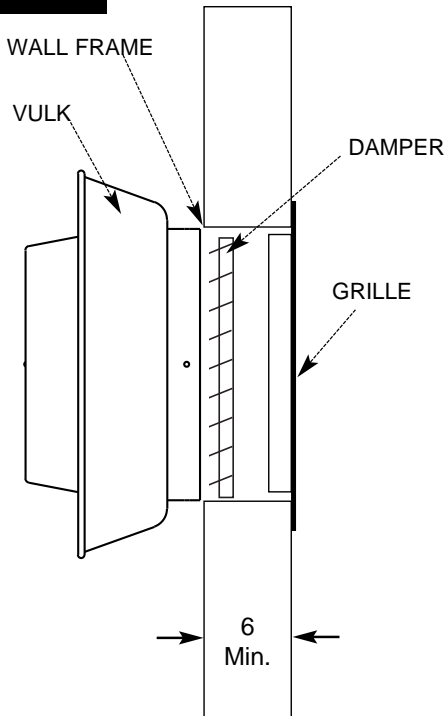


Figure 1 shows a typical Model VELK Low Profile Downblast Power Roof Ventilator & Figure 3 shows a typical Model VULK Low Profile Upblast Power Roof Ventilator installed without duct work. The roof flashing is shown installed over a standard canted style roof curb. A gravity operated backdraft damper is shown installed on the damper shelf which is located at the base of the roof curb. Power wiring is extended through the roof opening, through the damper conduit knockout, into the fan wiring chase and connecting to the factory wiring leads.

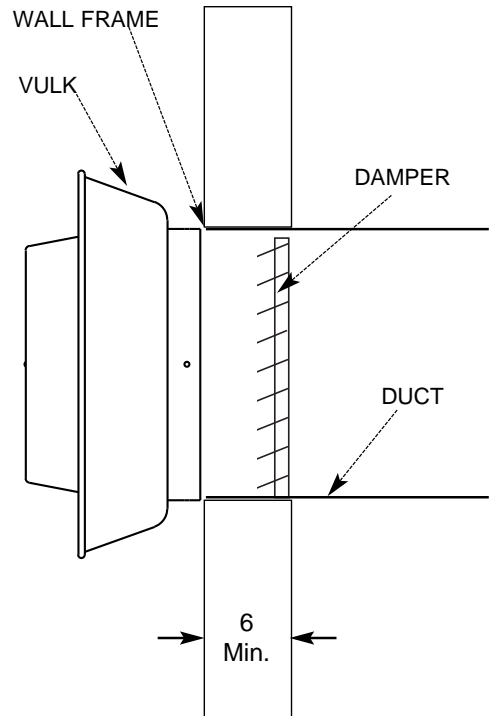
Figure 2 shows a typical Model VELK Low Profile Downblast Power Roof Ventilator & Figure 4 shows a typical Model VULK Low Profile Upblast Power Roof Ventilator installed with an exhaust duct. The duct is shown extending through the roof opening and inside a typical self flashing style roof curb. A gravity operated backdraft damper is shown fastened to a 3/4" x 3/4" sheet metal angle installed inside the exhaust duct. Power wiring is extended through the roof opening, through the damper conduit knockout, into the fan wiring chase and connecting to the factory wiring leads.

**Model VULK Sidewall Ventilator**

**Figure 5**



**Figure 6**



**Figure 5: NON-DUCTED — Sidewall Installation**

**Figure 6: DUCTED — Sidewall Installation**

*[Installation Details Continued on Page 6]*

Figure 5 shows a typical Model VULK Sidewall ventilator installed without duct work. The fan is mounted to the wall by a factory provided wall mounting frame. A gravity operated backdraft damper is shown installed in the wall, with a wall grille on the inside of the wall. Power wiring is extended through the wall opening, through the damper conduit knockout, into the fan wiring chase, and connecting to the factory wiring leads.

Figure 6 shows a typical Model VULK Sidewall ventilator installed with an exhaust duct. The duct is shown extending through the wall opening. The fan is mounted to the wall by a factory provided wall mounting frame. A gravity backdraft damper is shown installed in the ductwork. Power wiring is extended through the wall opening, through the damper conduit knockout, into the fan wiring chase, and connecting to the factory wiring leads.

Proper fan performance requires uniform and stable airflow at the fan inlet. Avoid transitions, obstructions, elbows or other duct fittings near the fan inlet.

Typical roof curb height is 8" to 12" above the roof deck. Additional height reduces the likelihood of snow or rain entering through the roof opening.

Installation and electrical work should be performed by qualified personnel and must be in accordance with all applicable code requirements.

For protection of personnel, inlet guards are recommended when the fan is within reach (or within 7 feet) of occupied areas or work areas.